

## **KFP-Medicine - Acceptance Speech**

**Robin Franklin**

Custodian of the Two Holy Mosques, King Salman Bin Abdulaziz, Your Highnesses, Your Eminences, Your Excellencies, Distinguished Guests, it is with the greatest pleasure and enormous pride that I accept this years King Faisal Prize in Medicine, which I am honoured to share with my distinguished colleague Professor Stephen Strittmatter.

As a young biologist there were two things that struck me as so fascinating that I was puzzled why anyone should be interested in anything else. The first is how complex organisms consisting of trillions of cells, all working in an integrated and harmonious manner, develop from a single cell? The second, related question, is how fully formed organisms, once damaged, are able to spontaneously repair themselves - a phenomenon unique in the known universe. Of course, not all tissues have the same capacity for regeneration. Bone and liver regenerate very well: the brain, on the other hand, does not, presenting medicine with the special challenge of promoting brain regeneration.

However, while it is true that the nerve cells or neurons of the CNS have very poor regenerative capacity, the same is not true of another cell type in the brain. This is the oligodendrocyte - the myelinating cell of the brain, whose fundamental importance to how the brain functions is only now beginning to be fully recognised. Our brains are full of stem cells that while unable to make new nerve cells, can make new oligodendrocytes with great efficiency. This means that in diseases of oligodendrocytes, the most common of which is multiple sclerosis, spontaneous regeneration will occur. The problem is that as with all regenerative processes its declines as we grow older. Over the last decade, we have discovered how age alters the regenerative capacity of brain stem cells, and more importantly, how this can be reversed. This means that we have been able to go from fundamental biology to clinical trails in patients with MS.

My work provides an example of how we can begin to tackle the substantial problem of regeneration in neurological disease when we invest in understanding the underpinning biology. We are on the cusp of making significant breakthroughs, which is why I am delighted to have our work recognised in this magnificent way by the King Faisal Foundation.